Proposals for Future BPM Research Directions

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Abstract. Business Process Management has substantially matured over the last two decades. The techniques, methods and systems available to scope, model, analyze, implement, execute, monitor and even mine a process have been scientifically researched and can be in most cases deployed in practice. In fact, many of these BPM capabilities are nowadays a commodity. However, an opportunity-rich environment and rapidly emerging digital disruptions require new BPM capabilities. In light of this context, this paper proposes three future research and development directions for BPM academics and professionals. First, Ambidextrous BPM demands the shift of focus from exploitative to explorative BPM. Second, Value-driven BPM postulates a stronger focus on the desired outcomes as opposed to the available BPM methods. Third, Customer Process Management suggests complementing the dominating internal view of BPM with a stronger, design-inspired view on the process experiences of external stakeholders.

Keywords: Ambidextrous BPM, value-driven BPM, customer process management, design-led process innovation, configurable BPM

1 Introduction

Business Process Management (BPM) has substantially matured over the last two decades. More than 20 years ago, Michael Hammer (1990) [1] and Thomas Davenport (1992) [2] initiated an entire stream of activity in practice and academia dedicated to the way organizations conduct their business processes. Their contributions took previous process-related work in manufacturing going back as far as Adam Smith, Frederick Taylor [3] and Henry Ford into the boardroom and made 'process' a topic and strategic design variable across industries and disciplines.

In the early 90s, BPM was largely seen as being enabled by large Enterprise Systems as they provided, pre-defined configurable processes as part of their comprehensive packages. Scheer's contributions towards a reasonably easy way to communicate a tool-supported, integrated process modeling technique (EPCs) further accelerated the uptake of BPM [4]. In addition to process-aware Enterprise Systems, dedicated workflow management systems (e.g., Staffware, Flowmark, COSA) entered the market in order to support processes largely outside such Enterprise Systems.

However, the radical re-design and fundamental process innovation as postulated by Hammer and Davenport faced two challenges.

First, beyond their compelling narratives, there was a very limited set of methods available in support of process re-engineering and innovation. Instead, the focus of corporate development and academic research efforts largely went into process modeling notations (e.g., BPMN), related validation and verification efforts (e.g., livelocks, deadlocks), process analysis and assessment techniques (e.g., Six Sigma, bottleneck analysis, activity-based costing) and process execution capabilities (e.g., workflow management solutions). As a consequence, the capability to specify, incrementally improve and automate processes has grown substantially. Nowadays, increasingly complex challenges (e.g., adaptive case management, exception handling, process similarity checks, complex event processing) are targeted and the progress remains impressive. As a result, BPM has a prominent place in today's application landscapes [5]. However, the actual uptake of BPM in the business, as postulated by Hammer and Davenport, did not see the same progression.

Second, and partly as a result of the lack of techniques, methods and systems catering for the ambitions of Hammer and Davenport, organizations which initiated BPR projects often failed dramatically and were not able to replicate the results of the cases as outlined by these two authors [6]. Not unlike other management concepts (e.g., Blue Ocean Strategy), the impression was that outcomes of successful process re-design projects could be observed *ex post*, but there was no reliable way to achieve these. The frequency of BPR failures severely damaged the reputation of management-by-process and put many process improvement projects on hold. Today, many large companies have a BPM Center of Excellence, but it remains typically rather small in scope and impact. In one third of all cases, as our research shows, it will be in the IT department [7].

In light of a methodological and technical landscape of BPM solutions targeting incremental process improvement and automated process execution, BPM as a discipline does not seem to be sufficiently equipped to harvest the potential of an increasingly opportunity-rich environment. One main reason is that current BPM capabilities are largely following an 'inside-out' paradigm, i.e. a process is executed, observable negative deviances and issues are analyzed and addressed where possible. Thus, BPM as it currently stands can be seen as reactive and largely 'opportunity-unaware', i.e. questions such as which of the processes of an organization benefits most from mobile solutions cannot be answered. The significance of this misfit of BPM capabilities is increasing when looking at the substantial changes in the global digital space affording new design possibilities and which have seen the emergence

- of digital public assets with exponential growth attracting user communities of previously unheard scale,
- an ability to outsource infrastructure, data and ultimately processes into the cloud and
- users with fast growing digital literacy possessing under-utilized, mobile, smart assets.

Consequently, it is proposed to complement BPM with an 'outside-in', environmental scanning capability, in which the relevance and impact of external opportunities can be quickly assessed. This will expose business processes to the potential of disruptive innovation and reduce *process innovation latency*, i.e. the time it takes

- to build awareness for the existence of innovation opportunities (data latency),

- to assess the applicability to the internal process landscape and the benefits of this opportunity (analysis latency), and
- to actually implement the opportunity-enabled process innovation (implementation latency).

Figure 1 shows the current, mature inside-out BPM capabilities. However, transformational process innovation rarely results out of the elimination of waste, variation or manual labor along a process. In addition to this inside-out capability (process problem to resolution), which serves well in an environment striving for predictable, streamlined and efficient processes, organizations aiming for innovation will require complementary outside-in capabilities identifying technological and strategic options and assessing their applicability to the existing or a possible new landscape of processes.

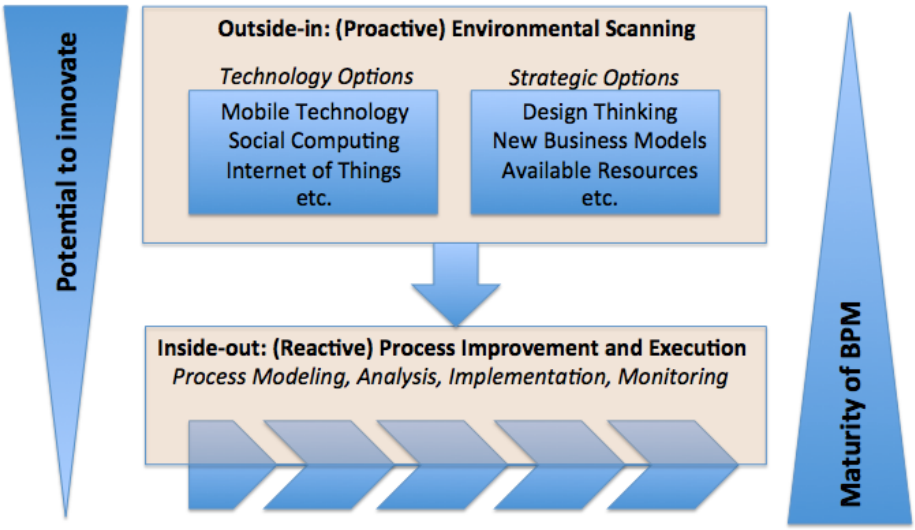

Fig. 1. The Maturity-Innovation Conflict in BPM

In light of this maturity-innovation conflict in BPM, i.e. the misfit between BPM capabilities and an increasingly opportunity-rich environment enabling true innovation, this paper proposes three new research and development directions for BPM. These three directions will be covered in the next chapters before conclusions will summarize the recommendations. First, *Ambidextrous BPM* will be introduced as a new way of conceptualizing BPM consisting of exploitative and explorative BPM. Second, *Value-driven BPM* will postulate a stronger focus on the intended outcomes of a BPM initiative as opposed to the traditional approach of remaining centered on the ability to model and execute processes. Third, *Customer Process Management* will be presented as the ultimate form of outside-in BPM as it puts the customer experiences and their processes at the core of any BPM project.

2 Ambidextrous Business Process Management

2.1 The Ambidextrous Organization

Organizational ambidexterity describes the co-existing corporate abilities of running the current operations as well as being able to continuously adapt the organization to a changing environment. With other words, the ambidextrous organization shows both exploitative and explorative strengths at the same time [8,9].

Exploitation aims towards securing the reliable execution of current business processes. It takes place in the current context of organizational and environmental constraints resulting from strategies, corporate governance, products, services, markets, policies, processes, procedures, regulations, etc. Exploitation secures the ongoing ability to execute business processes according to the promises made to its external and internal stakeholders and in alignment with efficiency expectations, contractual arrangements and compliance requirements. Being unable to *execute-to-promise* can mean ATMs without cash, booking systems unable to take orders, fraudulent currency brokers or failing payroll systems. Depending on the magnitude of the problem, lacking exploitative capabilities can even lead to bankruptcy as failing billing processes in the telecommunication industry have shown. Exploitation includes first loop learning, i.e. a process is monitored, any negative deviants are identified and required adjustments are made. Thus, exploitation is sensitive to the internal process capabilities. Its main metrics are costs, processing time, degree of compliance and further efficiency measures. It is no surprise that techniques, methods and systems supporting exploitation are rather formal, mechanistic, predictable and reliable in nature. Individuals involved in exploitation show high degrees of familiarity with regulations and performance standards and possess strong analytical, engineering abilities. They are mainly interacting with internal stakeholders (business analysts, project managers, various business representatives). Related models assume large degrees of certainty (e.g., predictable process execution).

Exploration is targeting a much stronger outside-in perspective, i.e. it is more driven by opportunities than internal process problems. Its overall aim is to enable innovation, growth and an effective and efficient capitalization on emerging business and technical opportunities. Unlike exploitation, which is driven by current practices, exploration is focused on possible future process practices. Exploration is about imagining a world with driverless cars, always connected customers, location-sensitive services and smart things facilitating new and threatening existing business models and revenue streams. Organizations with strong explorative capabilities follow non-linear, lateral thinking approaches and need to be sensitive to environmental changes in the making. Metrics relevant to exploration are innovation latency and customer-sensitive measures such as new net revenue potential. Individuals tasked with exploration have high sensing abilities, are inspirational and can craft compelling scenarios and visions of the future. They have design capabilities and know how to experiment and prototype. As such, staff tasked with exploration frequently interacts with external stakeholders such as customers, prospects, vendors, analysts or researchers. The world they see is full of uncertainty.

Exploitation and exploration are closely related as exploitative capabilities can be seen as necessary, but not sufficient in a changing environment. An organization not able to even execute-to-promise will have no foundation for far reaching explorative endeavors. This explains why many companies put substantial efforts in building exploitative capabilities before venturing into exploration. Unfortunately, many companies never make it beyond exploitative capability development. The ambidextrous organization, however, is ultimately strong in exploitation *and* exploration. The following table contrasts the views and ambitions of exploitation and exploration.

Alignment of	**Exploitative Business**	**Explorative Business**
Strategic intent	Cost, profit	Innovation, growth
Critical tasks	Operations, efficiency, incremental innovation	Adaptability, new products, breakthrough innovation
Competencies	Operational	Entrepreneurial
Structure	Formal, mechanistic	Adaptive, loose
Controls, rewards	Margins, productivity	Milestones, growth
Culture	Efficiency, low risk, quality, customers	Risk taking, speed, flexibility, experimentation
Leadership roles	Authoritative, top-down	Visionary, involved

Tab. 1. Exploitation versus exploration [10]

2.2 Exploitative BPM

The ideas and principles of the ambidextrous organization can be deployed to the domain of Business Process Management. They allow us to identify those capabilities BPM has to develop to remain of value in the future.

Exploitative Business Process Management is aiming towards running and incrementally improving business processes. It is the best reflection of the current state of the professional and academic BPM community. The existing body of knowledge on how to identify, scope, contextualize, model, analyze, compare, implement, execute, monitor, control and increasingly how to mine and assess the performance of processes can be regarded as being of high maturity.

Exploitative analysis capabilities are dedicated to assessing current processes with the aim to identify and quantify process problems. A large set of exploitative process analysis techniques has been developed and is widely deployed, for example

- *Lean management* with the motivation to locate and eliminate seven types of waste [11]
- *Six Sigma* which, based on a rich set of statistical tools, assesses and reduces the variation of process performance
- The *theory of constraints* targets the elimination of bottlenecks in the process and comes with a set of guidelines for how to overcome such bottlenecks [12]

- *Process modeling* can be seen as an approach targeting the lack of shared understanding among process stakeholders
- *Workflow management* and *straight through processing* approaches aim towards the replacement of manual labor via automation along business processes

Further process analysis techniques such as SIPOC (what is the context of the process?), viewpoint analysis (what process parts are visible to the accounting department?), scenarios analysis (how do loan applications below $1mio flow through the system?), Pareto analysis (do 20% of all processes explain 80% of all issues?) or process simulation (how does the process behave under different loads or with alternative resourcing?) increase the overall transparency in the analysis. None of these, however, is able to generate actual improvement ideas as an outcome.

Exploitative execution capabilities are dedicated to the reliable, automation of business processes taking into account the varying requirements of different types of business processes. Available solutions include workflow management, service-oriented applications, exception handling, (adaptive) case management or document management, but also hard-coded processes as they can be found in Enterprise Systems or industry-specific solutions (e.g., banking, insurance, higher education).

Exploitative BPM serves well in industries and organizations with largely static market conditions (e.g., banking back-offices, shared service providers, mass production). The efficient execution of processes secures economies of scale, leads to high levels of predictability, control and transparency. It simplifies resourcing, costing and overall planning decisions. Historical data as derived from event files has a high value and allows informing future process design activities.

Exploitative BPM capabilities in the form of methods and systems are widely available on the market and often obtainable for free (e.g., process modeling editors). Exploitative analysis and execution techniques have made it into the curriculum of many universities and more recent generations of business analysts are nowadays well equipped for all BPM challenges related to execution-to-promise. In many cases, exploitative BPM can be even regarded as a commodity, i.e. it is a corporate expectation that processes can be modeled, analyzed, implemented and executed. The successful execution of exploitative BPM, unless substantial operational gains are the result, hardly leads to excitement in the boardroom anymore. BPM centers of excellence within organizations that are purely focused on exploitative BPM tend to remain rather small in size and have limited, enterprise-wide visibility and impact.

If exploitative BPM can be indeed regarded as a commodity, a hygiene factor, it is not without its own challenges. Under-utilized process model repositories, process analysis projects consuming substantial resources and lasting for many months or failures in the execution of processes lead to substantial criticisms. In corporate capabilities that have become a commodity, the involved stakeholders will hardly ever receive the recognition they desire.

The last two decades have seen the growth of substantial exploitative BPM capabilities, and these achievements need to be applauded and form an excellent foundation. However, I recommend moving towards higher aspirations and channel future development and research efforts from exploitative to explorative BPM. What is needed in an opportunity-rich environment are revenue-sensitive BPM approaches

facilitating the design of entire new process experiences capitalizing on emerging technical solutions and satisfying a consumer base with increased digital literacy.

2.3 Explorative BPM

A pure exploitative approach to business processes will not be sufficient for the future as an exclusively internal, reactive focus on streamlining existing business processes takes the eye off the customer of a process. This is evidenced by the fact that hardly any company conducting BPM initiatives involves its customers (or prospects) into the design of its future processes.

The shortcomings of exploitative BPM are particular dramatic in industries exposed to the disruption of digital innovation meaning in many cases the emergence of an entire new class of competitors. The most famous, recent example is Kodak, an organization that at its peak employed 140,000 people, had a market value of $28billion and in 1975 invented the digital camera(!). The disruption of digital photography, as showcased by Instagram, was one factor that took Kodak out of business despite all its internal exploitative BPM capabilities. Kodak remained focused on products and processes further materializing its belief of being in the film industry. The fact that Instagram was sold for $1billion to Facebook and at that stage had 13 employees shows the diminishing role of scale. Further examples in the making are retail banks (competition: social media) and logistics and medical device providers (3D printing). The following more current examples show that a cost-effective process does not secure ongoing revenue streams and that business processes centered on revenue derived from brokerage are in danger.

- Over-the-top applications such as WhatsApp or WeChat have started to eliminate SMS-related revenue from telecommunication providers by providing zero-cost communication processes
- The peer-to-peer platform Airbnb has become a severe threat for the hotel industry as it enables direct provider-to-customer processes
- Paypal has extracted substantial revenue-generating processes from retail banks
- CourseERA and EdX are recent examples for how the provision of massive open online courses poses a threat to the revenue model of universities
- Services such as Uber and Lyft have started to cannibalise the market share of established taxi companies

Explorative BPM is a significant future opportunity, and challenge, for the BPM community. The techniques, methods and systems required here need to substantially go beyond what is available at this stage. The following points outline a few of the desired capabilities of explorative BPM. At its core is the facilitation, and where possible the (semi-)automated derivation of new processes.

Explorative BPM is about crafting *process visions* that are so compelling and transformational that they motivate staff, and customers, involved to explore (!) how to make a desired future state via a sequence of transition states a reality, and by this the current process obsolete. This is in sharp contrast to exploitative BPM, which develops new (to-be) processes in light of current shortcomings. The idea of compelling process visions goes back to Charles F. Kettering, research chief at General Motors who in the early 1920s did not want to accept that painting a car (by

hand) needed to take 37 days [13]. While Kettering's engineers believed it would be possible to reduce the processing time to 30 days, his vision of bringing this part of the car manufacturing process down to an hour led to the search for entire new opportunities far outside the immediate vicinity of the process. Kettering found the solution in the form of a new lacquer at a jewelry store in Manhattan. With the help of DuPont, a liquid was engineered that could be spray-painted and dried in minutes.

Current BPM techniques are not able to generate such process visions. Instead of the dominating, incremental reductionist approach (e.g., eliminate waste, variation, bottlenecks or manual work), entire new methods are required allowing to design such compelling scenarios and ways to achieve these. Further examples for such process visions are a bank aiming for a 24hrs mortgaging process, Amazon's delivery via drones, its anticipatory shipping concept *('we know before you know what you will buy'*) or a federal government aiming to renew a passport before the citizen notices that it expired. Many of these visions are inspired by current technologies and an ability to transfer their affordances into new process design opportunities. They are a result of seeing the capabilities behind technologies. BPM explorers have to have very ambitious goals and must be able to strip a process back to its most basic core.

Whereas exploitative BPM is centered on the construct of 'pain points' within a particular process, explorative BPM is about the identification of *opportunity points* in processes. Such opportunity points capture where in the collection of its processes a retailer will benefit from facial recognition, where an insurer could utilize location-based services, where a public sector agency could offer citizen-to-citizen brokerage services or where a travel agency could capture external, social signals for more proactive customer interactions. Such opportunity points need to be conceptualized with precise semantics and contextualized in existing BPM techniques, methods and systems. Ways for how to capture these within a process, but also as part of a process modeling query language are to be developed.

The environmental scanning that comes with explorative BPM can be supported by a trading place for truly inspirational, exciting business processes. Unlike the first wave of reference models, which have been developed for industries and disciplines such as telecommunication (eTOM), IT service management (ITIL), supply chain management (SCOR) or enterprise systems (e.g., SAP), future reference models need to go substantially beyond such common sense models. These large collections of reference models provided important foundations for organizations about to engage in BPM in the large. However, these models rarely have been a source of breakthrough innovation. In the spirit of *open process innovation*, new exciting reference process models will have to be much smaller processes or process parts. They would need to have a short latency, i.e. emerging technologies need to quickly be converted into such models (e.g., how do conduct pay-as-you-drive insurance services; collaborative consumption opportunities in online retail). The BPM community could play an important role in proposing such opportunities via formally defined and accessible reference processes. Assuming the right meta-tags are available, organizations could even subscribe to such a process innovation marketplace and would be notified, if innovations of potential relevance have been made available.

A further idea for developers and researchers committed to boosting explorative BPM could be the development of *process improvement/innovation systems* (PIS) providing services to existing BPM tools. The user of the future would be able to

highlight parts of the process landscape and such a PIS would semi-automatically propose possible process designs of interest using artificial intelligence in the form of fuzzy logic, machine-based learning or case-based reasoning. A possible scenario could be that a process analyst investigates a process including an invoicing activity. A PIS would among others propose the solution 'Usage-based pricing' and suggest to move the point of invoicing behind the point of consumption. Such a solution, while popular in car parks and for phone companies, might be of high interest for shared service providers, logistical service companies or tourist attractions. The role of the PIS is to rapidly increase the accessible, relevant solution space for the analyst. Developing a rich set of such process improvement patterns and related *process recommender systems* is a path of high relevance, but widely unexplored.

3 Value-Driven Business Process Management

Current BPM capabilities are centered on developing methods, tools and systems, and less about actual processes. This is noticeable in the nature of BPM papers and in the presentations from academia and BPM professionals. They largely report on the procedural aspects of the process of process management, and describe intermediary outcomes such as process architectures, process modeling techniques or BPM offices. However, in many cases they fall short in terms of reporting BPM's actual achievements. A discipline that is more focused on how it conducts its work rather than gathering evidence for the existence of its value propositions faces compromises to its credibility by those who take a black-box view on it.

Therefore, in a joint research project with Accenture [14], we wanted

(1) to identify those values that truly matter for BPM initiatives, and
(2) assess the extent to which BPM solutions support each of these values.

Grounded in a comprehensive literature review, this research involved a series of global focus groups in London, Sydney and Philadelphia with selected clients of Accenture. Our research outcomes showed that the frequent lack of an explicit focus on the intended outcomes of BPM is a main reason for its limited credibility. In addition, the dominant activity-driven, internal nature of BPM initiatives means that these projects rarely on the critical path of corporate development. Moreover, even if values are identified that drive a BPM initiative, existing BPM methodologies can often not be tailored to these specific values.

Value-driven BPM (VBPM) extends the current body of BPM knowledge and practices by giving priority to the objectives that drive a BPM initiative. Rather than following traditional BPM practices and concentrating on mapping the organization in hierarchies of value chains, VBPM starts with the "Value-Value-Chain, i.e. what needs to be done to achieve the outcomes which motivated the BPM project in the first place. It raises issues such as how BPM can contribute to the strategic agenda of an organization, how to make processes tangible and help to overcome classical business conflicts. VBPM means process management that can be tailored to the values that trigger the BPM initiative. Our research shows that organizations aim towards different values when starting a BPM initiative. These values can be summarized as one core value and three value pairs.

Transparency is at the core of the VBPM framework, and is fundamental to achieving any of the other six values. Only an organization that has a shared understanding of its processes can start reflecting on better ways to design and operate them. Thus, transparency is a necessary condition for VBPM. Research on tangible process modeling [15] or the use of virtual environments [16] are attempts to increase the transparency of processes and the ease-of-engagement in process design activities.

The six values can be grouped into three value pairs. While each of these pairs consists of two values that tend to be oppositional, BPM has the potential to moderate and ease these traditional conflicts.

The *efficiency-quality pair* reflects the widely accepted dichotomy of Porter's strategic core alternatives [17], i.e. a focus on streamlined, highly productive operations or a concentration on a customer-focused, quality-driven strategy.

The *agility-compliance pair* depicts the requirement to be highly adaptive and flexible versus the increased demand to ensure that operations are conducted predictably and according to compliance standards.

Finally, the *integration–networking pair* captures the fact that organizations can concentrate on integrating their employees in the design of processes or focus on networking with and benefiting from the input of external partners and resources. These three pairs are not strictly oppositional, and many organizations will actually have to address all six of these values in some form during their BPM initiative. However, our research shows that a BPM initiative can be characterized by choosing priorities within this value framework and within each of the three value pairs.

Three of these values capture internal goals, including efficiency, employee integration and compliance. In contrast, the other three values - quality, agility and networking - reflect values with an external focus (Figure 2).

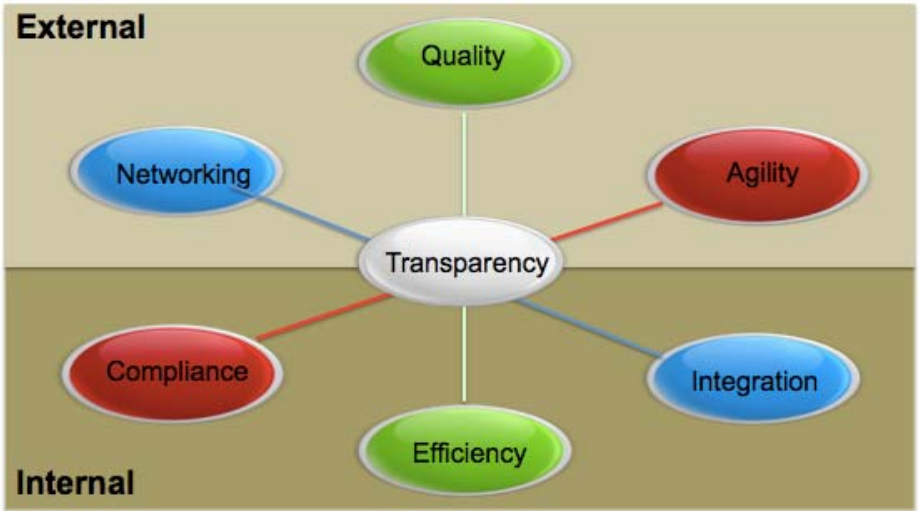

Fig. 2: The Values of Business Process Management [14]

In order to increase the value-sensitivity of BPM, researchers are encouraged to select

values of BPM and start customizing the current set of BPM capabilities. This would extend the fast growing body of knowledge on configurable processes to the domain of *configurable Business Process Management*.

Also labeled *X-aware BPM*, value-driven BPM requires tailoring and expanding BPM to the specific demands of a value. For example, BPM centered on the integration of internal employees needs to address questions as how to model, capture and increase employees' satisfaction with the business process and the activities involved. One possible path to explore would be, if the inclusion of a *'Like it'* button allowing staff to express an interest in such activities could extend existing work allocation principles towards an increased preference-based allocation of work within workflows.

Further relevance for Value-driven Business Process Management will be in the fast growing world of *'big process data'*. Data science and process mining are fields of interest and provide a rich set of analytical capabilities. However, without a close link to decision science and a sound understanding of the value such big data sets are supposed to generate, this community lacks a direction. An example can be seen in an approach to process mining following classical BPM values such as cost or time efficiency. In this case, a process mining exercise might identify negative deviants and trigger reactive process improvement activities aiming to overcome this issue. A focus on alternative values, e.g. revenue or customer satisfaction, combined with correlating event files with further case data can channel such process mining initiatives towards the positive deviants, i.e. identifying the future to-be processes within the as-is processes. In this case, the task will be to identify the distinct process patterns of such positive deviants and to explore the extent to which these patterns can be replicated by other stakeholders in a similar environment. Our own experiences in the domain of fresh-food retail and cross-organizational insurance processes have pointed to substantial gains in such process mining activities resulting from a simple shift in the value driver of BPM.

X-aware BPM could go far beyond the identified values and include strategy-aware, culture-aware, risk-aware, resource-aware, knowledge-aware, location-aware, context-aware, emission-aware or data-ware BPM. Some of these would not target immediate business values, but intermediary steps (e.g., context-aware BPM is one way to decrease corporate latency,and emission-aware BPM is one way to reduce the environmental footprint of an organization). Researchers will be required to build up deep expertise of the relevant value (e.g., what are the exact requirements of risk management?) and then develop appropriate solutions. This shows how value-driven BPM will go beyond the core goal of BPM, i.e. the reliable execution of processes with a focus on processing-time. It will in some cases also act as a counter balance to the paradigm of one-dimensional process optimization. For example, resource-aware BPM will need to balance the conflicting targets of managing idle time and waiting time and hardly ever lead to the process with the shortest time. Thus, value-driven BPM will ensure that BPM efforts are contextualized in light of a (global) corporate optimum, not just local process objectives.

4 Customer Process Management

Today, Business Process Management is focused on internal business processes such as procurement, manufacturing, sales or payroll. Despite the fact that many organizations claim to take a 'customer-centered' view on the process, actual customers are hardly ever involved in the analysis or design of business processes. Even further, the customers' process experiences before they consume the provider-specific business processes are often not captured. For example, the end-to-end process scope of a financial service institution providing mortgage services is a very small subset of the end-to-end experiences of a customer buying a house.

Customer Process Management is strongly aligned with the claim for a stronger outside-in focus on BPM. It is ultimately grounded in the existence of a *birth-to-death value chain*, i.e. all business processes are directly or indirectly derived from the value chain of the life of a customer.

CPM as opposed to BPM demands a mind-shift as beautifully articulated by Chris Potts [18]: *It is not about how customers participate in our (business) processes, but about how we participate in the customers processes."*

Following this view means processes start way before the customer contacts an organization, and are triggered by life events experienced by the customer (such as a wedding that triggers legislative processes to change names). An example for a customer process would be the car manufacturer who calls the driver when it is noted that the car had an accident. Failing a response, the manufacturer might consider sending an ambulance. In a similar way, health care solutions are now capable of sensing personal health data and can trigger actions when needed.

The affordances of the Internet of Things [19] and social media have strengthened the role of events, the 'poor cousin of BPM'. The dominating focus of BPM has been on activities and their cost-effective orchestration considering time and quality requirements. Events have played a role as part of architectures and models, but where typically not a first class citizen in business conversations regarding processes. In the world of customer processes, however, *process execution latency*, i.e. the time it takes a process to detect a possibly relevant event, analyze its relevance and create a process instance, if needed, has become a source of competitive advantage. Complex-event processing has started to explore this domain, but there is much to research here including how to design trusted processes ensuring unconditional privacy.

The more customer processes will be designed and supported, the more corporations will observe a shift from their business processes as the mode of engagement for their external stakeholders to the requirement of a seamless participation in the processes of their increasingly digitally enabled and literate customers. For example, when the Australian airline Qantas offered RFID-enabled frequent flyer cards to their passengers, it eliminated the demand for boarding passes. A boarding pass is a typical artifact that is necessary for a customer to participate in the business process of an organization. A customer would not request a boarding pass. Boarding by simply using a frequent flyer card, or fingerprints like in Sweden, means taking part in the processes of the customer. The interaction is reduced to a request for identification, not the existence of an artifact required by the company.

For the BPM community to engage with the idea of Customer Process Management, it needs to develop stronger design capabilities covering empathy,

integrative thinking, optimism, experimentalism and collaboration [20]. An emerging *Design-led Process Innovation* stream has the potential to replicate the success organizations had with the design of customer-centered products and services to the domain of processes. This will facilitate the identification of often hidden customer expectations in existing processes and open up entire new insights into process experiences that start far before the corporation is engaged.

5 Conclusions

The members of the BPM community are as human as everybody else. We are creatures of habits, look for certainty and exploit available skills and expertise. This is one explanation why we today observe a very high level of exploitative BPM capability, both in practice and in research. BPM tools, methods and systems still offer countless challenges requiring the development of new algorithms and solutions, and practitioners will continue to struggle to develop good process models and finding the true root causes of an as-is processes. However, the allocation of substantial resources, especially in research, into process modeling, process analysis, process execution and process mining has also taken away the focus on more disruptive but also less predictable process innovation challenges. These are in high demand when fast emerging technological opportunities need to be translated into value-adding affordances for corporations and their customers. This demand will hopefully encourage new talent from neighboring disciplines to join the BPM community.

This paper proposed under the label of 'Ambidextrous BPM' extending the strong exploitative BPM capabilities via future BPM research and development into the domain of explorative BPM. This direction provides countless opportunities to study how BPM solutions of the future can provide more advanced and proactive support in the quest for better processes.

Value-driven Business Process Management has been tabled as a way to re-sensitize the BPM community for the importance of the actual outcomes of BPM, i.e. tangible contributions to corporate goals. Researchers are invited to consider establishing a body of knowledge on configurable BPM, which will lead to BPM tools, methods and systems catering for the specific needs of individual BPM initiatives. This will in most cases require cross-disciplinary efforts in order to comprehend the specific needs of, for example, cost accounting, risk management or sustainability consideration.

Customer Process Management (CPM) is the ultimate form of an outside-in view on BPM. Building a Design-led Process Innovation capability will allow crafting processes tailored to the desired experiences of customers. Going beyond individual providers, might even lead to semi-automated customer processes in which not the customer, as at the moment, but CPM solutions will take over parts of the orchestration. The demand for such solutions will increase with the extent to which such processes are regulated.

No matter what the future will hold, BPM researchers have plenty of opportunities to explore new avenues. Like most process changes, this might, however, require a re-adjustment of current activities and true research into the yet unknown.

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